Annual Report

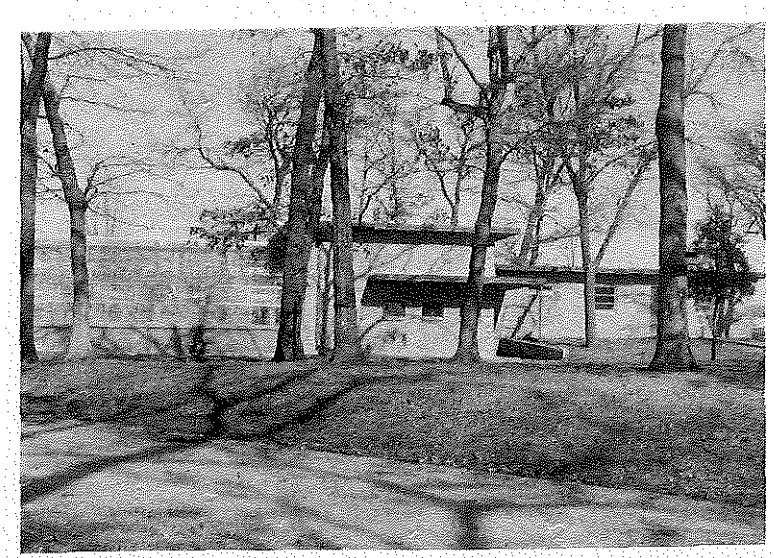
FOREST PEST CONDITIONS IN WISCONSIN

1958

WISCONSIN CONSERVATION DEPARTMENT

FOREST MANAGEMENT DIVISION

FOREST PESTS — SURVEY AND CONTROL



Forest Pest Survey and Control Building
Nevin Hatchery
Madison

INTRODUCTION

The Forest Pest Survey and Control Program in Wisconsin is one of close cooperation with other agencies including the University of Wisconsin, the State Department of Agriculture, the U. S. Forest Service, Industry, and neighboring states. This cooperation has permitted rapid action on pest problems when needed.

The Forest Pest Control Section has continued to grow in stature by adding both more personnel and by the erection of a new survey and control laboratory. One hundred and thirteen forest pest observers, including men from several other divisions in the Department, were active in the field during the past season.

Seventy-seven species of insect pests and 15 diseases were reported compared with 61 insects and 11 diseases in 1957. There were no spectacular pest outbreaks in 1958 such as those of the few preceding years. Most of the old problems such as jack pine budworm, pine tortoise scale, and saddled prominent were quiescent.

Much work remains to be done to properly evaluate damage done by insects and disease. Except where trees are obviously killed outright it is difficult to determine the more subtle losses in growth and downgrading of timber due to pest activity such as severe defoliation, the work of wood borers, and decay organisms. Survey techniques that will divulge these losses and permit their evaluation with a fair degree of accuracy are needed. This type of information could then be used in managing timber and applying the most practical methods of pest control to give the highest possible yield of quality products.

Coniferous plantation pest problems are going to increase as the number of acres of plantings increase each year. Insects already present in the state will present a challenge to the successful growth and management of a timber crop in many instances. Then there is always the danger of becoming involved with exotic pests. Each year an appreciable amount of planting stock is brought into the state from other states which have pests that are not found here. A follow-up of this stock for a season or two after it is planted would permit detection of such pests before they could become a serious problem.

This year some phenological data has been included in the sections on insects and diseases reported. This year's data alone may be of little value at this time but over a period of years the accumulation of more complete information on specific pests should prove valuable in predicting their activity and the time of year it will occur.

FOREST PEST CONDITIONS IN WISCONSIN - 1958
GENERAL ACTIVITIES

Personnel

For the first time since the Pest Survey and Control Section began operating on an area basis a forest entomologist is stationed in each area. Placement of a man at Black River Falls in September completed filling of the area entomologist vacancies. Pest survey and control men are now stationed at Spooner, Antigo, Black River Falls, Oshkosh, and Nevin Hatchery near Madison. The office of the section supervisor is also at Nevin Hatchery.

Forest Pest Survey and Control Building

Construction of the Forest Pest Survey and Control Building at Nevin Hatchery was started the first week in July. The office portion of the building was ready for occupancy by the end of December. This building will serve as the central office and laboratory for Department survey and control activity.

Meetings and Conferences Attended

The annual Lake States Forest Insect Survey Conference was attended in St. Paul, Minnesota, on February 4 and 5. Among the topics discussed were survey definitions, appraisal of growth impact and growth loss, survey problems, aerial techniques for spruce budworm surveys, and survey procedures for several forest pests.

The Seventh Annual Central International Forest Insect and Disease Conference was attended at the Kawishiwi Field Laboratory of the Lake States Forest Experiment Station near Ely, Minnesota. Trips were made to different areas in the field where the following were observed and discussed: jack pine rusts, white pine blister rust and white pine weevil, hypoxylon canker and aspen stem borers in relation to canker, black spruce dwarf mistletoe, and plant succession following fire.

A meeting was held at Devil's Lake State Park on May 15 with park personnel to bring them up-to-date with the latest information on how to control mosquitos and flies in public use areas. Dr. Robert J. Dicke of the University of Wisconsin, Department of Entomology and division entomologists participated in presentation of material. A number of companies demonstrated equipment for controlling insect pests.

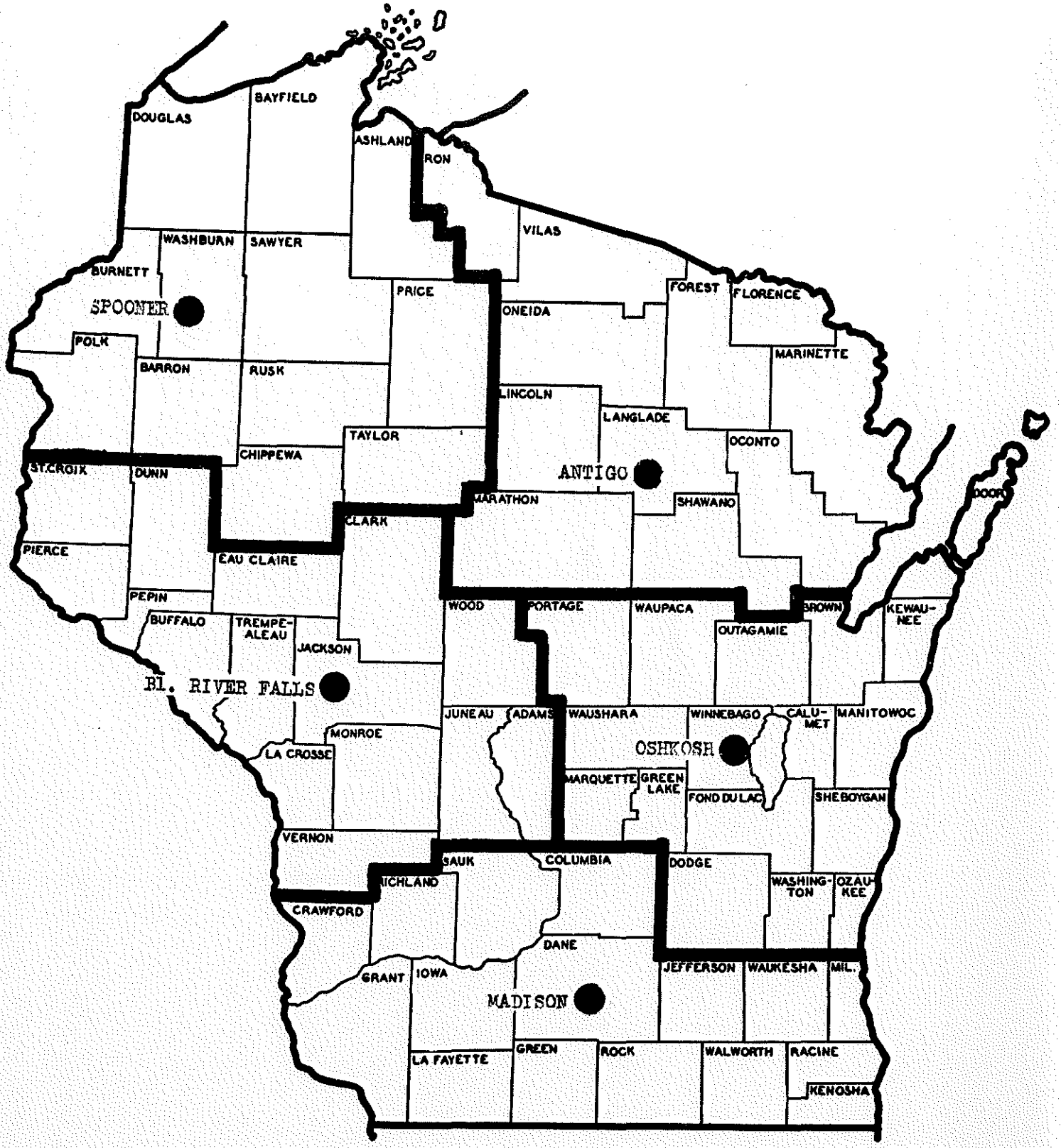
On June 6 a spruce budworm control operation was visited to observe techniques used to protect spruce-fir type in an area teeming with lakes. The spruce-fir was being protected until the area could be logged.

The Birch Club was brought up-to-date on the latest maple blight information at a meeting at Land O' Lakes on June 10.

A meeting of the Christmas Tree Grower's Association was attended at Waupaca on June 20. Christmas tree pest problems were discussed on a field trip.

In addition to the above meetings the area entomologists assisted in numerous conservation educational programs including the State Fair in Milwaukee.

OFFICES OF THE AREA ENTOMOLOGISTS



COOPERATIVE INSECT SURVEYS

Under the provisions of the Forest Pest Control Law the Commission is empowered to enter into arrangements and agreements with other departments of this and other states, federal agencies and other agencies to enable coordination of pest control work.

A Memorandum of Agreement was entered into between the Department, the Wisconsin Department of Agriculture, and the U. S. Department of Agriculture on April 1, 1955. This memorandum has been renewed each year.

Under this agreement the Department provides the Wisconsin Department of Agriculture with survey information it obtains during the growing season. This information is combined with that on agricultural pests and the combined information is disseminated to interested people throughout the state. The summary report is also sent to the Plant Pest Control Division of the Agricultural Research Service of the U. S. Department of Agriculture where it is incorporated in the weekly Cooperative Insect Survey Report. This report is distributed nation-wide.

Information on pest problems is also exchanged with personnel at the University, the Lake States Forest Experiment Station, the U. S. Forest Service Pest Control Section, and personnel in neighboring states and Canadian provinces for the mutual benefit of all.

IN-SERVICE TRAINING

The Fifth Annual Forest Pest Observer Training School was held at Trees for Tomorrow Camp, Eagle River, from March 31 to April 3.

Thirty foresters from the Forest Management Division, eight Game Management personnel, one man from the Forest Protection Division, and two U. S. Forest Service employees attended the school. University entomologists lectured on Basic Principles of Forest Entomology; university forest pathologists on Diseases of Forest Trees; division personnel on forest pests and survey and control. Representatives from the Wisconsin Department of Agriculture, the U. S. Forest Service, and the Lake States Forest Experiment Station presented information on the activities of their agencies.

This was the first year of a series of two-year training sessions started in 1953. They are given to familiarize Department field personnel with insect and disease problems in the state. With such training it is hoped that these men will be more aware of pest activity they may encounter in the course of their regular work. By reporting their observations maximum coverage of forest insect and disease conditions is made possible each growing season.

DIRECT CONTROL OPERATIONS

Saratoga Spittlebug Control

Surveys in early July of more than 30,000 acres of red pine plantations indicated a need for spraying 1,271 acres in a six county area. All except 140 acres treated were in the Northeast Area. Spraying was started on July 26 in Oconto County and completed in Price County on July 28. DDT at the rate of one pound per gallon of oil solution per acre was applied at a cost of $2.35 per acre for the insecticide and its application.

Total cost of the spraying was $3,051.09 of which the state paid $2,569.33. County and private land owners paid $411.26 as their share and the Northern Highland State Forest's share was $70.50 under the provisions of the Forest Pest Control Act.

The acreage treated and the cost of aerial application of insecticide for control is shown in the following table:

County	Total Acreage Sprayed	Acreage Sprayed Free of Cost to Owner	Costs Shared Equally	Cost to State (first 160 A or part thereof + half of cost on remaining acreage)	Cost to Owner	Total Cost of Spraying
Oconto	120	120		$ 282.00		$ 282.00
Florence	121	121		284.35		284.35
Price	140	140		329.00		329.00
Marinette	359	160	199	609.82	$233.83	843.65
Lincoln	311	160	151	553.42	177.43	730.85
Vilas	220	160	60	446.50	70.50	517.00
	1,271	861	410	$2,505.09	$481.76	$2,986.85
		Insecticide used for wiping in spray blocks				61.10
		Fuel oil for calibrating airplane				3.14
				Total Cost		$3,051.09

White Grub Control

Successful establishment of new pine plantings is often dependent on the use of a soil insecticide at planting time. Use of spray applicator attachments on planting machines provides easy, inexpensive protection to young transplants from damage by grubs. Dipping the tree roots in an insecticide solution, where a sprayer is not available, is considerably better than no treatment at all, although spraying the insecticide on the roots and in the soil opening at planting time gives the best results.

Complete records of acreage treated in 1958 were not available, but reports indicate that use of soil insecticides was more extensive than in 1957. The following counties in the Northeast Area reported acreage treated:

Shawano	268
Marathon	525
Florence	27
Oconto	118
Marinette	317
Total	1,255 Acres

An estimated 3,470 acres were treated in the East Central Area.

Alternate rows were treated with a sprayer mounted on the planter. One of few survivors is being examined in one of the two untreated rows that are plainly evident.

Trees at the right were treated by dipping the roots in insecticide solution. The area at the left was stocked the same but the roots were untreated.

European Pine Shoot Moth Control

Small scale tests of three types of equipment for control of the European pine shoot moth were made at Point Beach State Forest in Manitowoc County. One application of insecticide was made the last week in June and a second during the first week in July. Portable knapsack sprayers, a portable mist blower, and a hydraulic sprayer mounted on a small truck were tested for possible use on small acreages. Results of the tests have not been evaluated to date.

INSECTS REPORTED

COLEOPTERA

Larch Bark Beetle - Dendroctonus simplex Lec.

Numerous on decadent larch in Waushara, Sheboygan, and Manitowoc Counties.

Root Collar Weevil - Hylobius radicis Buch.

Plantations in Burnett and Washburn Counties, and to a lesser extent in Douglas and Bayfield Counties, continued to be under attack by this insect. Many trees died during the season and many apparently healthy trees were blown over by strong winds after being weakened by the weevil. Jack pine plantations in the northwest appear to be more severely attacked than red pine.

Heavy infestations were reported on Scotch pine in Shawano and Oconto Counties. Christmas tree plantings and some windbreaks were damaged.

Although the weevil was widely present in the west central counties, relatively little current mortality was apparent. In the East Central Area, however, Scotch pine continued to die as a result of weevil attack in Marquette, Waushara, Waupaca, and Portage Counties. A small number of red pines were also attacked in these counties.

White Grubs - Phyllophaga sp.

Severe infestations were reported in newly planted areas of Marathon and Shawano Counties. Damage was moderate in some cases, but most areas were treated with insecticide during planting.

White grubs did not seem to present much of a problem in the East Central Area where losses were considered nominal. Beetles were flying during the week of May 16. A moderately heavy peak flight occurred in the Southern Area on May 19.

(See section on Direct Control Operations for acreage treated.)

White Pine Weevil - Pissodes strobi (Peck)

Infestations were noticeably heavier in most of the Northwest Area. Both white and jack pine sustained damage and most plantations averaged infestations of 10% or more.

Attacks continued to be heavy in Vilas, Oneida and Marinette Counties on white and jack pine plantations. Some red pine plantings with 15% to 20% infestations were treated in Vilas County.

White pine weevil populations varied considerably in the West Central Area. Current infestations up to 40% were found on white pine in the northern part of the area. Infestations were from 10% to 20% in the central part of the area and rarely exceeded 10% south of Highway 21. Infestations on jack pine were lighter than on white pine, and attacks on red pine and spruce were rare.

COLEOPTERA (continued)

White Pine Weevil (continued)

Heavy feeding was observed during the week of April 14, and copulating pairs were observed on April 16 and 17 in the Northwest and Northeast Areas. Oviposition was about completed by May 16 in the East Central Area. Some pupation had occurred in Jackson County by July 9. Parasitism of weevils was heavy in Waushara and Waupaca Counties and few weevils had reached maturity on August 19.

DIPTERA

Balsam Gall Midge - Itonida balsamicola (Lint.)

Light to moderate damage was observed on Christmas tree stock in Langlade, Oneida, and Forest Counties. Populations appeared to be at a low level in all areas from which it has been reported in the past.

HEMIPTERA

Pine Bark Aphid - Pineus strobi (Htg.)

Continued to be a problem on white pine nursery stock. Infestations were heavy in all the state nurseries except at the relatively new nursery at Boscobel where light infestations were found in the 3-0 stock. Several chemical treatments were applied at each nursery during the growing season to control this insect.

Pine Spittlebug - Aphrophora parallela (Say)

Light populations were reported in the northern counties. In the central part of the state high populations were reported from Juneau County and lesser populations in Jackson County. The insect appears to have been a major factor in the serious decline of a small red pine plantation in the Black River State Forest. Large populations were found on Scotch pine in Marquette and Waushara Counties, where red pine growing in close proximity to infested Scotch pine was reportedly damaged.

First instar nymphs were observed in Marquette and Waushara Counties the week of June 3 and had progressed to the last instar in these counties by the week of June 23. Adults were reported from Jackson County on July 9. Late nymphal stages were found near Lone Rock on June 9 and in Columbia County on June 21.

Saratoga Spittlebug - Aphrophora saratogensis (Fitch)

Infestations were generally light in the Northwest and East Central Areas. Locally high populations in the Northeast Area required control. In the West Central Area populations were highest in Clark, Wood, and northern Jackson Counties. (See section on Direct Control on page 4.)

Eggs were reported hatching in the Northeast Area the week of May 9. Adult emergence was occurring in the Northwest and Northeast Areas the week of July 21. Emergence was complete in Douglas, Bayfield, Outagamie, and Brown Counties by August 1.

Pine Tortoise Scale - Toumeyella numismaticum (P. & McD.)

Only scattered infested jack pine seedlings and saplings were reported from the northern counties. A few seedlings were killed in the Northeast Area.

HYMENOPTERA

Sawfly - Diprion frutetorum (F.)

This insect was reported to occur rarely in the East Central Area. It was reported from Marquette County for the first time.

Introduced Pine Sawfly - Diprion similis (Htg.)

Defoliation was lighter in the Northwest Area than in previous years. Parasitism was high in southern Burnett and Polk Counties, including the Apple River Area. A survey made during the fall revealed that the insect was quite widely distributed in the state.

It was found in all Northwest Area counties and all of the West Central Area except the southeast corner. Light populations were found in Clark, Eau Claire, La Crosse, and Wood Counties where this sawfly was reported for the first time. (See map on page 10.)

Jack Pine Sawfly - Neodiprion americanus banksianae (Roh.)

A few isolated colonies were reported in Polk and Bayfield Counties. Two heavy infestations were reported in Oneida and Oconto Counties, and light infestations or scattered colonies were observed elsewhere in the northeast.

Balsam Fir Sawfly - Neodiprion abietis (Harr.)

Light defoliation of balsam being grown for Christmas trees was reported in Douglas County. Light populations were observed on spruce and balsam in Langlade, Vilas, Oconto, and Florence Counties.

Red-headed Pine Sawfly - Neodiprion lecontei (Fitch)

Northwest Area

Generally distributed on scattered open grown trees and in young jack pine and red pine plantations. No damage serious enough to warrant control reported.

Northeast Area

Young red pine and jack pine plantings required some control work with hand operated equipment. Heavy infestations were reported by observers in Marinette, Oconto, Vilas, and Langlade Counties. Some windbreak trees averaging eight feet in height were completely defoliated in two growing seasons. (See Direct Control Operations, page 4.)

West Central Area

A few small infestations were reported from scattered locations. This sawfly was not a serious pest anywhere in the area during 1958.

East Central Area

Except for several infestations in small plantations in Waupaca County, the sawfly was conspicuously rare over most of the area. Few or no larvae were found in areas of previously heavy infestations in Waushara County, and small numbers of larvae were found in widely scattered locations in Portage and Outagamie Counties.

Southern Area

Attacks on plantations of red and jack pine were less severe than in 1957.

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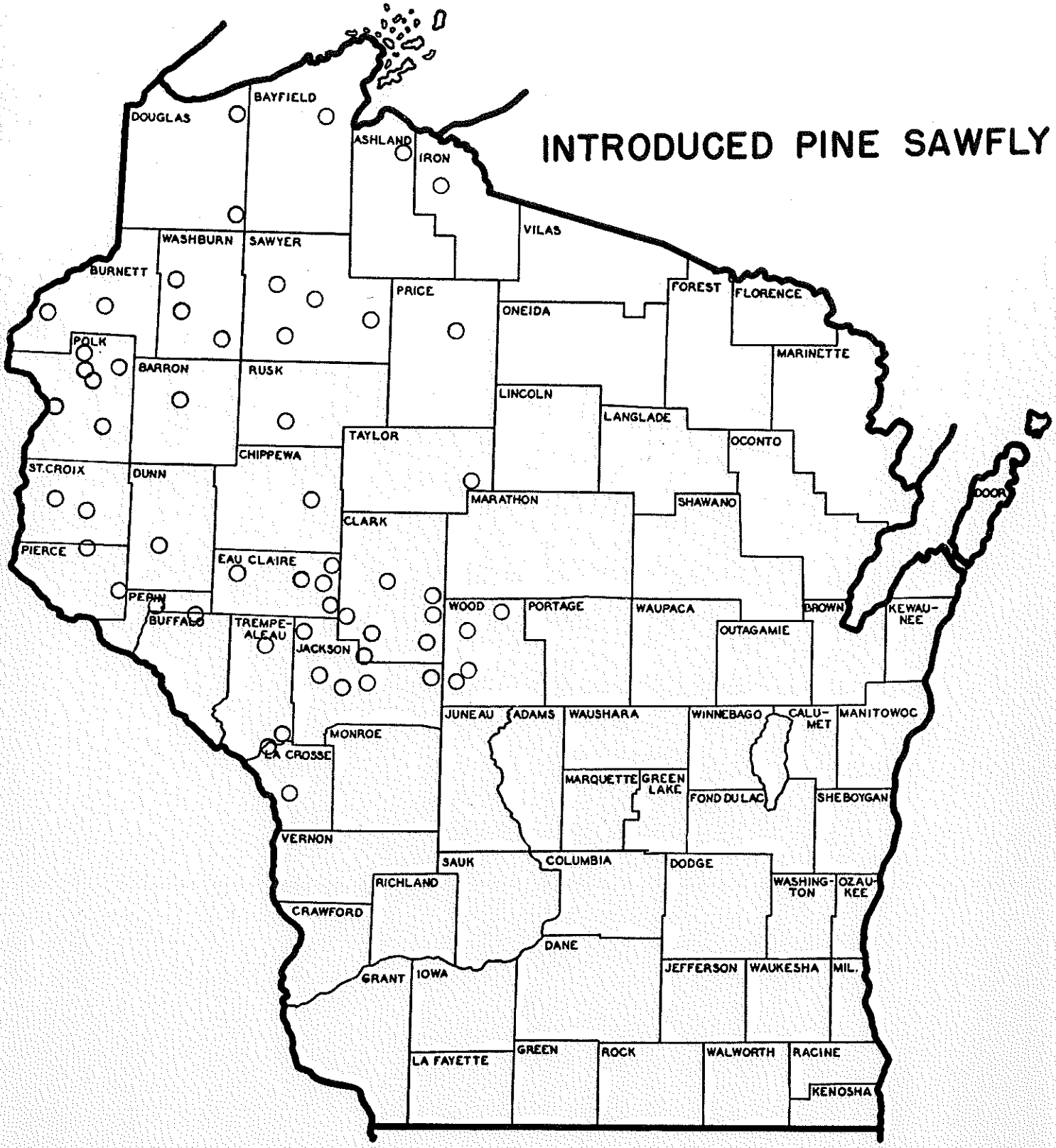


APPROXIMATE LOCATIONS OF REPORTED INFESTATIONS

HYMENOPTERA (continued)

Red-headed Pine Sawfly (continued)

Oviposition was observed on red pine in Lincoln County on June 3. Larvae were beginning to cocoon in Burnett, Washburn, Barron, and Douglas Counties the week of August 15. Larvae were still active on open-grown trees in Bayfield and Douglas Counties the week of August 29.

Red Pine Sawfly - Neodiprion nanulus Schedl.

Reported on red pine and jack pine in Barron, Bayfield, Burnett and Douglas Counties. Larvae were numerous on jack, red, and Scotch pine near Montello in Marquette County. Egg counts were high in the fall in parts of Jackson, Juneau, and Wood Counties.

Eggs hatched at Poynette about the 10th of May. Second instar larvae were found in Langlade, Lincoln, and Marquette Counties by June 3, and heavy larval parasitism was observed in Marquette County by June 11. Larvae were reported from Bayfield County the week of June 13.

White Pine Sawfly - Neodiprion pinetum (Nort.)

Plantations and windbreaks were attacked in Jefferson, Green, and Grant Counties. Red pine was attacked in a mixed plantation of white and red pine in Grant County, and isolated red pines were infested near a heavily infested small planting of white pine in Sheboygan County.

Freshly hatched larvae were reported in the Browntown Public Hunting Ground in Green County during the week of June 16. Oviposition was noted in Sheboygan County the week of June 23. By July 29 cocoons were observed in Grant County. Last instar larvae were not found in Green County until the first of August and in Fond du Lac and Sheboygan Counties until mid-August.

Larch Sawfly - Pristiphora erichsonii (Htg.)

Northwest Area

Practically all tamarack stands in the area sustained moderate to complete defoliation. Reports indicated that in several locations defoliation was somewhat less than in 1957.

Northeast Area

Severe defoliation was reported in all counties. Populations appeared to be increasing and a much larger total area was completely defoliated than in the previous year. Marked trees in some stands were stripped of foliage for the third consecutive year.

West Central Area

Most tamarack stands were heavily defoliated except isolated pockets in Buffalo and Trempealeau Counties.

East Central Area

Noticeable defoliation occurred in many stands, particularly in Waushara County.

HYMENOPTERA (continued)

Larch Sawfly (continued)

Southern Area

Defoliation was very light in some stands. There were few signs of the sawfly in the East Central Area on June 3 but all larval stages were found in Winnebago County by July 8. Fourth instar larvae were observed in Jackson County by the same date and heavy defoliation was apparent in the central counties by July 21. The first four instars were present in Northwest Area stands by the same date and top defoliation was appearing. Cocoons were first observed in the area the last week in July and some stands were completely defoliated by this time. By the end of the third week complete defoliation of Northeast Area stands had occurred, larvae were becoming scarce, and some stands had started to leaf out again.

LEPIDOPTERA

Large Aspen Tortrix - Archips conflictana (Wlkr.)

This insect caused moderate to severe defoliation in aspen stands in parts of Rusk, Price, and Ashland Counties.

Birch Skeletonizer - Bucculatrix canadensisella (Chamb.)

Premature discoloration and loss of leaves in birch stands was confined to a few small areas in the Northwest Area. Severe defoliation of white birch occurred in some parts of Shawano, Iron and Oconto Counties in the Northeast Area. Appearance in the East Central Area was general but light. Some premature discoloration and loss of leaves was reported on ornamental birch.

Larvae were cocooning in Jackson, Monroe, and Clark Counties September 18.

Jack Pine Budworm - Choristoneura pinus (Freeman)

Northwest Area

Populations were extremely light in most of the area. A few stands in eastern Douglas and western Bayfield Counties had moderate to heavy early instar populations. Cold wet weather delayed insect activity and many larvae perished before maturity. Surveys showed egg masses to be very scarce, and little noticeable defoliation was observed anywhere in the area.

Northeast Area

Populations were at low levels throughout the area.

West Central Area

Medium to high populations of second and third instar larvae were found in some jack pine stands in late May. Populations dropped to low and medium levels by the time the last instars were present. The moth flight was light and few egg masses were found in July. Apanteles and Tachinid parasites were observed during the larval surveys and were perhaps important factors in reducing the budworm population. Very little obvious defoliation appeared in the area.

LEPIDOPTERA (continued)

Jack Pine Budworm (continued)

East Central Area

Very light infestations were found in jack pine areas of Marquette and Waushara Counties. Defoliation was noticeable only on close examination.

Larvae were starting to pupate by mid-July in the Northwest Area. Pupation was completed in Douglas and Bayfield Counties by July 25. The first moths were observed on July 21. An egg mass from which the larvae had hatched was found in Jackson County during the week of July 21.

Larch Casebearer - Coleophora laricella (Hbn.)

Populations were very light in all areas.

Jack Pine Shoot Borer - Eucosma sonomana Kearf.

Widespread in jack pine plantations and reproduction stands in the West Central Area. Terminal damage ranged up to eight per cent in spotty infestations in Marquette, Waushara, and Waupaca Counties.

Saddled Prominent - Heterocampa guttivitta (Wlkr.)

Larvae were very scarce in Door County where heavy defoliation had occurred in 1956 and 1957. Moderate defoliation of maple occurred in a small area in central Bayfield County. Larvae were feeding the last week in August.

Forest Tent Caterpillar - Malacosoma disstria (Hbn.)

Northwest Area

A few isolated areas sustained moderate defoliation in the northern part. In eastern Rusk County, northern Taylor County, southern Ashland, and most of Price County, the majority of the aspen stands were completely defoliated. Pupal parasitism was high in these areas.

Northeast Area

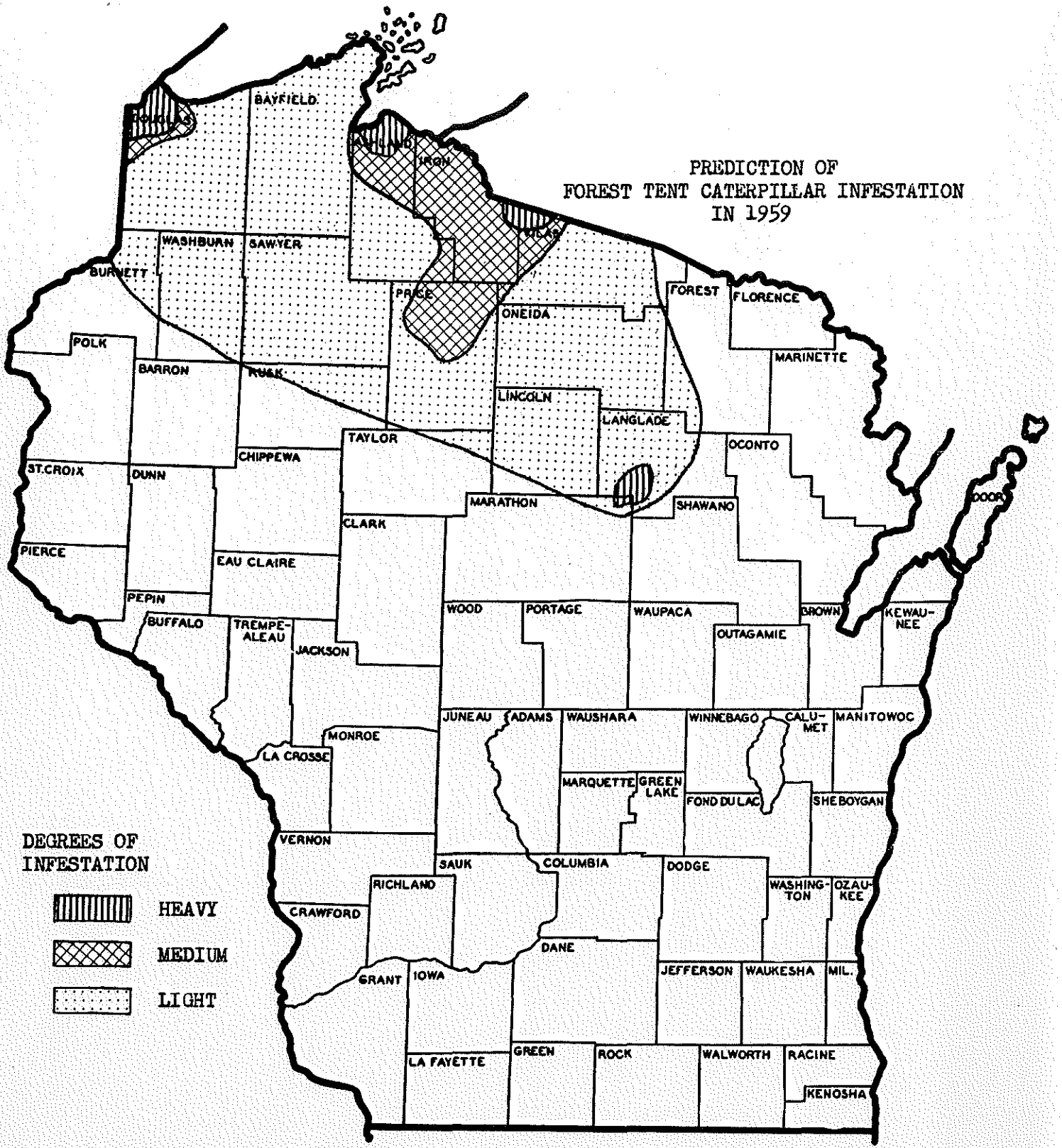
The insect was reported from most counties in the area. Severe defoliation of aspen occurred in western Vilas and Iron Counties. An area of 25 sections was completely defoliated in Langlade County.

East Central Area

Larvae were found in Green Lake, Marquette, Waushara, and Winnebago Counties, but their occurrence was rare.

Hatching was complete in Oneida and Langlade Counties by May 13. Complete defoliation of some stands in Iron, Vilas, and Oneida Counties was reported by June 17. Pupation was taking place in Price and the other counties just mentioned by June 27. Further south and east pupation was occurring by June 11 in Green Lake, Marquette, Waushara, and Winnebago Counties. (See map on page 14 for "Prediction of Forest Tent Caterpillar Infestation in 1959".)

FOREST INSECT CONDITIONS IN WISCONSIN 1958



ANTICIPATED AREAS & DEGREES OF INFESTATIONS FOR 1959 BASED ON A WINTER EGG BAND SURVEY

WISCONSIN CONSERVATION DEPARTMENT

LEPIDOPTERA (continued)

European Pine Shoot Moth - Rhyacionia buolinan (Schiff.)

This pest is still mainly a problem of the East Central and Southern Areas. In the East Central Area the insect has maintained a high population level. Attacks have been most severe within 10 miles of the Lake Michigan shore, particularly on red pine. Infestations further west in the area are largely on ornamental trees, particularly mugho pine.

In the Southern Area reports of the shoot moth on red and Scotch pine were received from Kenosha and Waukesha Counties. Most reports concerned infested ornamental trees, although there were scattered occurrences of the insect in the southern unit of the Kettle Moraine State Forest.

The shoot moth has been reported from the following counties:

Brown	Milwaukee
Calumet	Oconto
Columbia	Outagamie
Dane	Ozaukee
Dodge	Racine
Door	Rock
Fond du Lac	Sheboygan
Green	Walworth
Green Lake	Washington
Jefferson	Waukesha
Kenosha	Winnebago
Manitowoc	Wood

Pupation occurred the first week in June in the Point Beach Area and was taking place about May 23 in Kenosha County. Moth emergence in the Point Beach Area approached 100% by July 19 after being delayed by cool rainy weather.

Pine Webworm - Tetralopha robustella Zell.

Somewhat lighter than last year although still common throughout the Northwest Area on jack pine. No serious damage was noted. Webworm nests were rare in the West Central Area in contrast to the previous season when they were common.

Larvae had hatched and were observed feeding in Sauk County by August 4.

INSECTS ASSOCIATED WITH MAPLE IN THE NORTHEAST AREA

Agromyzidae

Evidence of the presence of a dipterous cambium miner belonging to this group was observed in hard maple in the blight area of Florence County.

Maple Leaf Roller - Sparganothis acerivorana McKay

Larvae were observed in most of the hard maple stands in the area. Defoliation was light. This species was observed from May until pupation took place in early July.

INSECTS ASSOCIATED WITH MAPLE IN THE NORTHEAST AREA (continued)

Leaf Roller - Acleris chalybeana Fernald

This leaf roller is common in the northern hardwoods. Larvae appeared in July and August following pupation of the maple leaf roller. Populations of this insect were light and the rolled leaves served as oviposition sites for eggs of the maple webworm (Tetralopha sp.)

Maple Webworm - Tetralopha sp. near asperatella

This pest caused light defoliation in 1958. Defoliation had been severe in 1956 and 1957. Peak adult flights occurred in late July. Egg laying by the webworm was found to be consistently confined to leaves rolled by the leaf rollers that had been in the maple stands earlier in the season.

Maple Trumpet Skeletonizer - Epinotia aceriella (Clem.)

A light infestation was reported in the maple blight area of Florence County. Larvae were collected during egg surveys for the maple webworm.

OTHER FOREST INSECTS REPORTED

COLEOPTERA

Strawberry Root Weevil	Brachyrhinus ovatus (L.)
Wood Borers	Buprestidae
Sap-feeding Beetle	Colopterus truncatus (Rand.)
Bark Beetles	Dendroctonus sp.
Leaf Chafer	Dichelonyx albicollis (Burm.)
Pales Weevil	Hylobius pales (Hbst.)
Bark Beetles	Ips sp.
Rose Chafer	Macrodactylus subspinosus (F.)
Locust Borer	Megacyllene robiniae (Forst.)
Pine Gall Weevil	Podapion gallicola (Riley)
Poplar Borer	Saperda calcarata (Say)
Smaller European Elm Bark Beetle	Scolytus multistriatus (Marsh.)
Hickory Bark Beetle	Scolytus quadrispinosus Say

DIPTERA

Red Pine Needle Midge	

HEMIPTERA

Black Pine Leaf Scale	Aspidiotus californicus Coleman
Eastern Spruce Gall Aphid	Chermes abietis (L.)
White Pine Aphid	Cinara strobi (Fitch)
Elm Cockscomb Gall Aphid	Colopha ulmicola (Fitch)
Elm Lacebug	Corythucha ulmi O. & D.
Wooly Elm Aphid	Eriosoma americanum Riley
Hackberry Nipple Gall Aphid	Pachypsylla celtidis-mamma (Flet.)
Cottony Maple Scale	Pulvinaria vitis (L.)
Blackberry Psyllid	Trioza tripunctata Fitch

HYMENOPTERA

Pine False Webworm	Acantholyda erythrocephala (L.)
Dusky Birch Sawfly	Croesus latitarsus (Nort.)
European Spruce Sawfly	Diprion hercyniae (Htg.)
Birch Leaf Miner	Fenusa pusilla (Lep.)
Elm Leaf Miner	Fenusa ulmi Sund.
Swaine's Jack Pine Sawfly	Neodiprion swainei Midd.
Yellow-headed Spruce Sawfly	Pikonema alaskensis (Roh.)

LEPIDOPTERA

Green - striped Mapleworm	Anisota rubicunda (F.)
Cherry Scallop Shell Moth	Calocalpe undulata (L.)
Spruce Budworm	Choristoneura fumiferana (Clem.)
Walnut Caterpillar	Datana integerrima G. & R.
Zimmerman Pine Moth	Dioryctria zimmermani (Grote)
Fall Webworm	Hyphantria cunea (Drury)
Eastern Tent Caterpillar	Malacosoma americanum (F.)
Mourning Cloak Butterfly	Nymphalis antiopa (L.)
Pine Tussock Moth	Olene plagiata (Wlkr.)
Spring Cankerworm	Paleacrita vernata (Peck)
Pitch-blister Moth	Petrova albicapitana (Busck.)

LEPIDOPTERA (continued)

Carpenter Worm	Prionoxystus robiniae (Peck)
Spruce Needle Miner	Recurvaria piceaella (Kearf.)
- - - - - - -	Tortrix pallorana (Rob.)
Pitch Mass Borer	Vespamima pini (Kell.)

ORTHOROPTERA

Walkingstick	Diapheromera femorata (Say)

FOREST DISEASES

Maple Blight

The mortality of maple in Florence County was the problem of the year. Maple blight was first detected in 1957 and early appraisals proved it to be a potential menace to northern maple stands. In 1958 research was initiated and is currently being conducted by entomologists, pathologists, silviculturists, and soils specialists of all interested agencies and private industry. No definite conclusions have been formed, but the cause is suspected to be due to a complex interaction of factors.

Department entomologists have been involved with the survey of the blight since its detection in Florence County. Periodic surveys from the ground and air during the growing season provided information on the boundaries of the blight and intensity of wilting and mortality within the area. Running records have been kept on maps which indicate that there was little spread of the blight area, but mortality of maple within it was still severe in 1958. In connection with the survey in Florence County three strips 1,500 feet wide through representative portions of the blight area were photographed by aerial photographers of the U. S. Forest Service. Stereoscopic analysis of these photos scaled to one inch per 500 feet have been a valuable supplement in determining extent of wilt and mortality. (See map on page 20 indicating the general area in Florence County and approximate degree of mortality.)

Ground surveys in other parts of the state turned up an area of dead maple displaying symptoms of blight in Iron County near Mercer. This area totalling less than three acres is being kept under surveillance.

Along with the appraisal surveys, a faunistic survey employing black light traps was conducted to provide knowledge of insects which might be associated with the blight. Adults of three important pests, two species of leaf roller and one of webworm, were collected in this way twice weekly enabling a qualitative analysis of their flight peaks and abundance. Collections were sent to the university for determination.

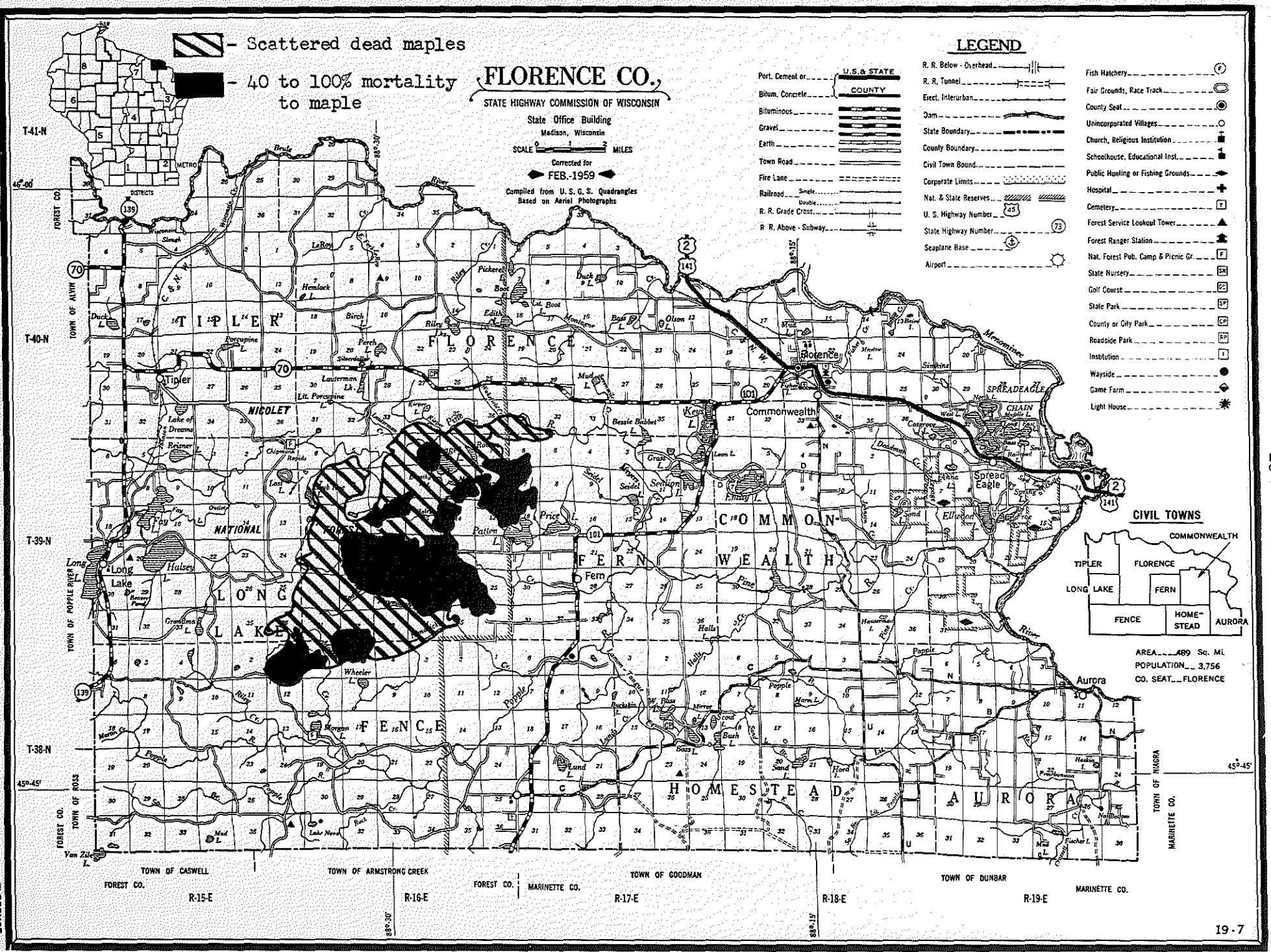
Ground work was also laid for a survey technique of the defoliating stages of these three pests. These preliminary surveys showed, as did early fall defoliation surveys, that the pests were not present in epidemic proportions in 1958.

Sweet-fern Blister Rust - Cronartium Comptoniae Arth.

This disease was found in natural jack pine and in plantations in Washburn, Burnett, Bayfield and Douglas Counties in the Northwest Area; Marinette, Oconto, and Oneida Counties in the Northeast; and Adams, Jackson, Juneau, Monroe, and Wood. Ruptured aecial blisters were observed in all the above areas between May 27 and 29. Infections were generally low but ran as high as 10% in some stands examined.

Oak Wilt - Ceratocystis fagacearum (Bretz) Hunt.

Numerous reports of wilt-killed trees were received from the central and southern counties. Aerial surveys were continued in the northwestern part of the state in July. Wilt pockets were not observed north of an east - west line through Eau Claire although they were common to the south.


- Scattered dead maples
- 40 to 100% mortality to maple
FLORENCE CO.,
STATE HIGHWAY COMMISSION OF WISCONSIN
State Office Building
Madison, Wisconsin
SCALE 0 1 2 MILES
Corrected for
FEB.-1959
Compiled from U. S. G. S. Quadrangles
Based on Aerial Photographs
LEGEND
Port. Cement or Bitum. Concrete
U.S.& STATE
COUNTY
Bituminous
Gravel
Earth
Town Road
Fire Lane
Railroad Single Double
R. R. Grade Cross
R. R. Above - Subway
R. R. Below - Overhead
R. R. Tunnel
Elect. Interurban
Dam
State Boundary
County Boundary
Civil Town Bound.
Corporate Limits
Nat. & State Reserves
U. S. Highway Number
State Highway Number
Seaplane Base
Airport
Fish Hatchery
Fair Grounds, Race Track
County Seat
Unincorporated Villages
Church, Religious Institution
Schoolhouse, Educational Inst.
Public Hunting or Fishing Grounds
Hospital
Cemetery
Forest Service Lookout Tower
Forest Ranger Station
Nat. Forest Pub. Camp & Picnic Gr.
State Nursery
Golf Course
State Park
County or City Park
Roadside Park
Institution
Wayside
Game Farm
Light House
CIVIL TOWNS
COMMONWEALTH
TIPLER
FLORENCE
LONG LAKE
FERN
FENCE
HOME-STEAD
AURORA
AREA 489 Sq. Mi.
POPULATION 3,756
CO. SEAT FLORENCE
TIPLER
FLORENCE
COMMONWEALTH
NICOLET
NATIONAL
LONG LAKE
FERN
FENCE
HOMESTEAD
AURORA
Florence
Tipler
Commonwealth
Long Lake
Fern
Aurora
Spread Eagle
TOWN OF ALVIN
TOWN OF POPPLE RIVER
TOWN OF ROSS
TOWN OF NIAGRA
TOWN OF CASWELL
TOWN OF ARMSTRONG CREEK
TOWN OF GOODMAN
TOWN OF DUNBAR
FOREST CO.
MARINETTE CO.
T-41-N
T-40-N
T-39-N
T-38-N
R-15-E
R-16-E
R-17-E
R-18-E
R-19-E
45°-00'
45°-45'
88°-30'
88°-15'

FOREST DISEASES (continued)

Dutch Elm Disease - Ceratocystis ulmi (Buisman) Moreau.

Dutch elm disease has been reported from 10 counties in the southeastern corner of the state. A small number of infected trees were found in Dane, Green, and Ozaukee Counties for the first time. Previously the disease had been found in Jefferson, Waukesha, Milwaukee, Rock, Walworth, Racine, and Kenosha Counties.

The principle vector, the smaller European elm bark beetle (Scolytus multistriatus (Marsh.)) was reported for the first time from Calumet and La Crosse Counties according to the Wisconsin Department of Agriculture.

The native elm bark beetle (Hylurgopinus rufipes Eich.) was found in 10 new counties including Calumet, Crawford, Dodge, Juneau, Ozaukee, Rock, Waukesha, and Vernon.

The disease has been found in farm woodlots in the southeast corner of the state. It is not practical to spray the trees in forest stands to prevent spread of the disease by the beetles. Good woodlot sanitation practices, which include removal and burning of dead or decadent trees and branches, would help reduce the hazard to valuable elms in communities near the woodlots. Such practices would help eliminate the vectors of the disease by destroying their breeding places.

Oak Blight

Oaks in the Northwest Area appeared to be in better condition than they had the past two years. No new mortality was reported in Burnett and Washburn Counties.

Maple Dieback

Numerous reports of dieback on maples were received from the northern counties.

OTHER DISEASES REPORTED

Shoestring Root - rot	Armillaria mellea (Vahl) Quel.
Pine Needle Rust	Coleosporium solidaginis (Schw.) Thuem.
Pine - Oak Gall Rust	Cronartium cerebrum (Peck) Hedge
White Pine Blister Rust	Cronartium ribicola Fischer
Cedar - Apple Rust	Gymnosporangium juniperi-virginianae Schw.
Hypoxylon canker	Hypoxylon pruinatum (Kl.) Cke.
Jack Pine Needle Cast	Causal agent unknown
White Pine Blight	Causal agent unknown
Root Rots of Pine and Spruce	Causal agent unknown